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F16L 11/18

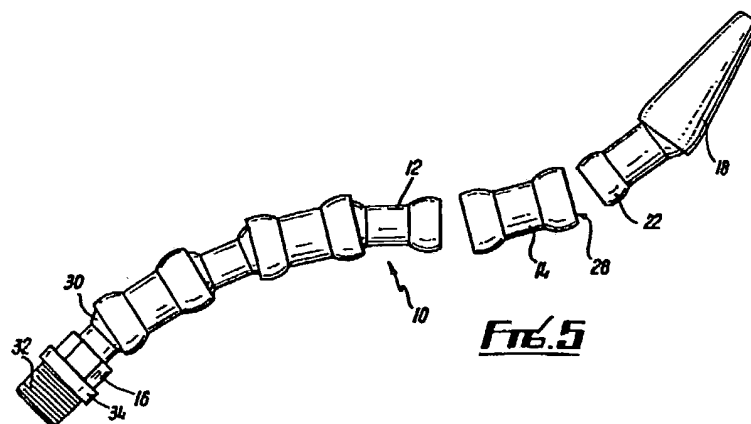
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EP A2 0197546 EP A1 0167063 FR A 1098836
US 1695263
Machine Design, Vol. 56, No. 11, May 1984,
Cleveland, Ohio, page 38

(58) Field of search
F2P
Selected US specifications from IPC sub-class
F16L

(54) **Tubular conduit**

(57) A tubular conduit (10) is formed of a plurality of first components (12) interfitting with a plurality of second components (14). The conduit (10) may include a component (16) for connecting with a fluid supply and a nozzle component (18). The components (12) each have a through bore and part ball shaped ends (22) while the components (14) each have a through bore and part ball shaped end recesses (28). The components (12, 14) can push fit together in the manner of a universal coupling.



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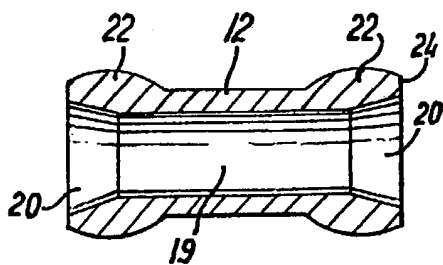


FIG. 1

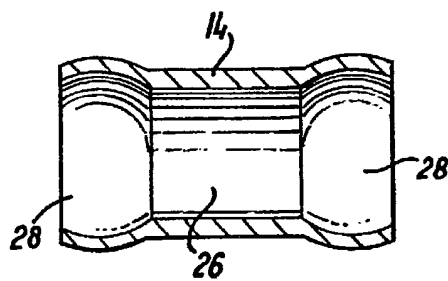


FIG. 2

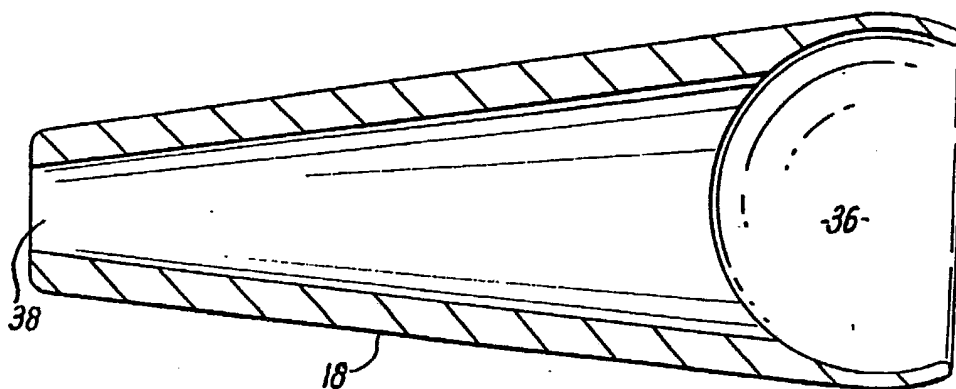


FIG. 3

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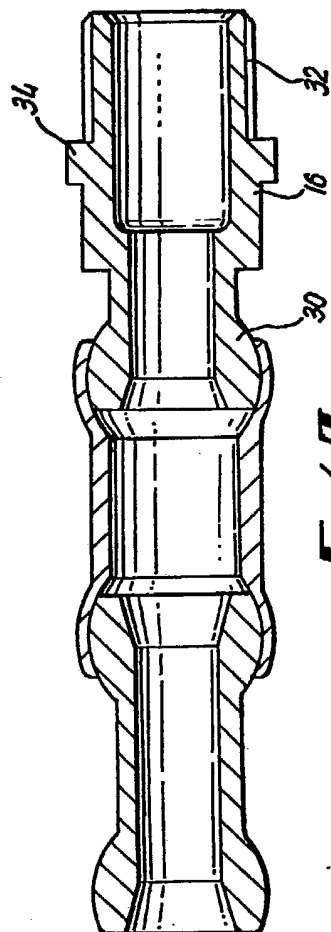


FIG. 4

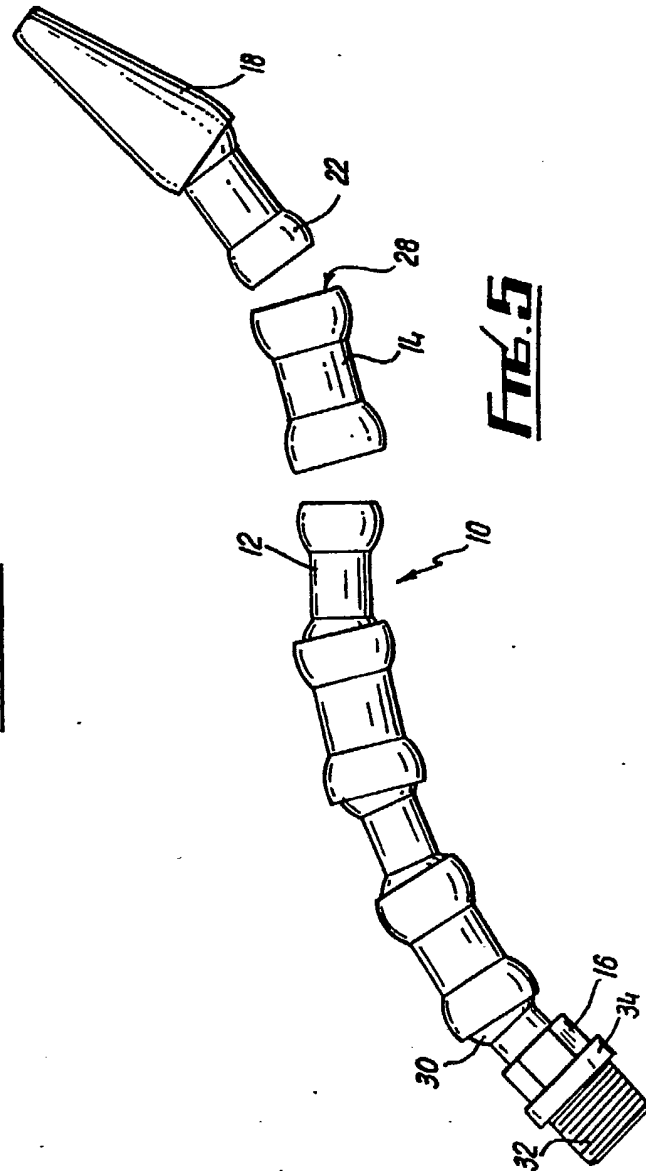


FIG. 5

Tubular Conduits

This invention relates to a flexible tubular conduit for transmission of fluids therethrough. The conduit is particularly useful, because of its flexible nature, for transmission of fluids to different and often relatively difficult and/or inaccessible locations in an apparatus.

According to the present invention there is provided a tubular conduit for flow of fluid therethrough, the conduit comprising a plurality of first and second components alternately interconnected, each of the first components having opposed ends of the same profile and each of the second components having opposed ends of the same profile but complementary to the profile of the ends of the first components, the first and second components having adjacent ends movably interfitting in a fluid tight relation and providing flexibility for the conduit.

Preferably the first component has a through bore and each end is partly ball shaped. The second component may have a through bore opening at each end into a part ball shaped recess, whereby a respective ball shaped end of one of the first components locates within a respective ball shaped recess of one of the second components in the manner of a universal coupling.

In addition to the plurality of the first and second components, the conduit may have a nozzle component which may have at one end a part ball shaped recess within which seats a ball shaped end of one of the first components. Further the conduit may include a connector component having means for attachment to a fluid supply and may have a ball shaped end of the same profile as the ball shaped ends of the first component, whereby to interfit with a respective one of the second components.

The components are preferably formed of a plastics material.

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings, in which :-

Fig. 1 is a sectional elevation through a first component of a conduit;

Fig. 2 is a sectional elevation through a second component of the conduit;

Fig. 3 is a sectional elevation through a nozzle component of the conduit;

Fig. 4 is a sectional elevation through a part of the conduit showing interconnected components; and

Fig. 5 is a perspective view a conduit showing

components both interfitted and positioned for interfitting.

Referring to the drawings, a conduit or hose 10 for use particularly in transmitting fluids to relatively inaccessible locations in machines or supplying fluids at varying locations, is particularly useful in transmitting coolants and lubricants or for use as an air line.

The conduit 10 has a sealed flexible configuration by virtue of being formed by a plurality of first components 12 interfitted with a plurality of second components 14. A connector component 16 is provided to connect with a fluid supply and with one of the components 14, while a nozzle component 18 is provided at the outlet end to connect with one of the components 12.

Each component 12 has a through bore 19 opening at each end into an enlarged section 20 which increases in diameter towards the respective outer end. At each end the component 12 is formed with a part ball shaped profile 22 terminating in a planar end 24. Each of the components 14 has a through bore 26 of increased diameter relative to the bore 19, the bore 26 opening at each end into a part ball shaped recess 28. The ball shaped ends 22 and the ball shaped recesses 28 are complementary and enable an end 22

of one of the components 12 to be push fitted into a respective one of the recesses 28 so as to be retained thereby in the configuration of a universal coupling. To enable push fitting assembly, the components are formed of a plastics material, the ends of the component 14 slightly resiliently deforming to enable insertion of the ends of the component 12. Any desired length of conduit 10 can thus be formed by interfitting of alternate ones of the components 12 and 14.

To connect to a fluid supply, the conduit 10 has the component 16 formed on one end with a part ball shaped profile 30 the same as the ball shaped ends 22 of the component 12, whereby the connector component forms a universal coupling with one of the components 14. At its other end the connector component 16 is formed with an externally threaded section 32 for fitting to the fluid supply and an annular abutment flange 34.

At its outer end the conduit 10 has a nozzle component 18. The latter has one end formed with a ball shaped recess 36 of the same profile as the recesses 28 of the component 14, whereby the nozzle component 18 forms a universal coupling with a respective end of one of the components 12. The nozzle component 18 tapers towards its other end to form an outlet nozzle 38.

The conduit 10 thus provides a through bore which is sealed along its length by the sealing relationship between the respective ends of the components. Due to the nature of the conduit 10 there is considerable flexibility as to the location at which the fluid may be delivered, the friction between respective components enabling the conduit to remain in any desired configuration. The conduit is particularly suited for use in spraying or degreasing baths where workpieces of varying shapes are treated and fluids may be required to be delivered at selected ones of different locations on the workpiece.

Various modifications may be made without departing from the invention. For example the shape of the component may differ from that shown provided there are two designs of component which can pivotally interconnect with one another in a fluid sealing relationship.

Claims:-

1. A tubular conduit for flow of fluid therethrough, the conduit comprising a plurality of first and second components alternately interconnected, each of the first components having opposed ends of the same profile and each of the second components having opposed ends of the same profile but complementary to the profile of the ends of the first components, the first and second components having adjacent ends movably interfitting in a fluid tight relation and providing flexibility for the conduit.
2. A conduit according to Claim 1, wherein the first component has a through bore and each end is partly ball shaped.
3. A conduit according to Claim 2, wherein the second component has a through bore opening at each end into a part ball shaped recess, whereby a respective ball shaped end of one of the first components locates within a respective ball shaped recess of one of the second components in the manner of a universal coupling.
4. A conduit according to any of Claims 1 to 3, including a nozzle component.
5. A conduit according to Claim 4, when dependent on

Claim 2 or 3, wherein the nozzle component has at one end a part ball shaped recess within which seats a ball shaped end of one of the first components.

6. A conduit according to any of the preceding Claims, including a connector component having means for attachment to a fluid supply.

7. A conduit according to Claim 6, when dependent on Claim 2 or 3, wherein the connector component has a ball shaped end of the same profile as the ball shaped ends of the first component, whereby to interfit with a respective one of the second components.

8. A conduit according to any of the preceding Claims, wherein the components are formed of a plastics material.

9. A tubular conduit for flow of fluid therethrough, substantially as hereinbefore described with reference to the accompanying drawings.

10. Any novel subject matter or combination including novel subject matter herein disclosed in the foregoing Specification or Claims and/or shown in the drawings, whether or not within the scope of or relating to the same invention as any of the preceding Claims.